File

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRYAN A. BEAMAN

Appeal No. 95-4870
Application 07/812,094[1]

ON BRIEF

Before MEISTER, STAAB and McQUADE, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

This appeal is from the final rejection of claims 1, 3, 6 through 9 and 11 through 17, all of the claims pending in the application.[2]

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[1] Application for patent filed December 23, 1991.

[2] Claims 1, 14 and 16 have been amended subsequent to final rejection.

The appellant's invention relates to a non-impact printhead, e.g., an LED printhead, having what is described in the specification as an improved grounding arrangement. Claims 1, 14 and 16, the three independent claims on appeal, are illustrative. Copies of these claims as submitted with the appellant's substitute main brief (Paper No. 17) are appended hereto.

The references relied upon by the examiner as evidence of obviousness are:

De Schamphelaere et al. (De Schamphelaere)	4,536,778	Aug. 20, 1985
Jacobs et al. (Jacobs)	4,866,507	Sep. 12, 1989
Theus	4,904,968	Feb. 27, 1990
Dody et al. (Dody)	4,942,405	Jul. 17, 1990
Lee et al. (Lee)	5,072,075	Dec. 10, 1991
Beaman et al.	5,079,567 (filed Mar. 4, 1991)	Jan. 7, 1992

The claims on appeal stand rejected under 35 USC 103 as follows:[3]

a) claims 1, 7, 12 and 14 as being unpatentable over Beaman in view of Dody, Lee and Jacobs;

b) claims 3, 6, 13 and 15 as being unpatentable over Beaman in view of Dody, Lee and Jacobs, and further in view of De Schamphelaere;

[3] The examiner has withdrawn the 35 USC 112, second paragraph, rejection set forth in the final rejection (see the advisory action dated September 15, 1993, Paper No. 14).

c) claims 8, 9 and 11 as being unpatentable over Beaman in view of Dody, Lee, Jacobs and De Schamphelaere, and further in view of Theus;

d) claim 16 as being unpatentable over Beaman in view of Dody, Theus and Lee; and

e) claim 17 as being unpatentable over Beaman in view of Dody, Theus and Lee, and further in view of De Schamphelaere.

Beaman discloses a non-impact printhead comprising an array of LED recording elements 30, integrated circuit driver chips 40 for driving selected recording elements, spreader boards 36 for distributing electrical signals to the driver chips, tiles 20 for supporting the spreader boards, driver chips and the array of recording elements, and bus bar assemblies 60 for carrying power and ground signals along the length of the printhead. The grounding system for this printhead is not described in any appreciable detail.

Dody discloses a non-impact printhead which is similar in many respects to that disclosed by Beaman. It includes a metal mother plate 10 upon which the printhead tiles 13 are mounted. Dody indicates that "[t]he mother plate serves as a ground plane for the LEDs and integrated circuits mounted in the assembly" (column 3, lines 23 through 25).

Lee discloses a high density circuit board having a power core 4 located between upper and lower signal cores 2. As shown in Figure 1A, the power core includes a ground plane.

Jacobs discloses an integrated circuit chip package having coplanar wiring layers wherein coplanar signal lines are separated by at least one power or ground line to minimize cross-talk (see column 4, lines 36 through 46).

De Schamphelaere discloses a non-impact printhead having a base plate or tile which may be made of metal or of an insulator such as glass or ceramic having at least its upper surface coated with an electrically conductive layer (see column 4, lines 6 through 19).

Theus discloses a computer printed circuit board having a copper ground plane 36 formed on its bottom surface.

The manner in which the examiner proposes to combine these references along with several officially noticed practices in the prior art is set forth at great length in the main and supplemental answers (Paper Nos. 18 and 26). In short, the disparate teachings of the applied prior art do not justify a conclusion that the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

The flaws in the examiner's position begin with the basic combination of Beaman and Dody. There is simply nothing in the collective teachings of these two references which would have suggested a non-impact printhead having means defining a ground path extending along the face of the tile between the array and the spreader board as recited in claims 1, 14 and 16. The examiner's conclusion to the contrary (see pages 4, 5 and 10 in the main answer) is based on speculation, unfounded assumptions and impermissible hindsight reconstruction. The other applied prior art references and officially noticed prior art practices, even if assumed for the sake of argument to be analogous prior art,[4] fail to cure this fundamental deficiency in the examiner's case.

More generally, while the examiner's evidence indicates that most, if not all, of the individual components of the claimed invention are known in the prior art, this evidence contains no suggestion to combine the known components so as to arrive at the claimed invention. The mere fact that the prior art could be modified in a particular manner would not have made the modification obvious absent a suggestion of the desirability

[4] The appellant maintains that the Lee, Jacobs and Theus references constitute non-analogous prior art which should not have been considered by the examiner in evaluating the obviousness of the claimed invention (see, for example, pages 7 through 9 and 14 in the substitute main brief).

of the modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). It is readily apparent from the many rationalizations offered in support of the rejections on appeal that the examiner has impermissibly employed the appellant's claims as a template to selectively piece together isolated disclosures in the prior art.

Accordingly, we shall not sustain the standing 35 USC 103 rejections of independent claims 1, 14 and 16, or of claims 3, 6 through 9, 11 through 13, 15 and 17 which depend therefrom.

The following new rejection is entered pursuant to 37 CFR 1.196(b).

Claims 8 and 9, and claim 11 which depends from claim 9, are rejected under 35 USC 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter the appellant regards as the invention.

The second paragraph of 35 USC 112 requires claims to set out and circumscribe a particular area with a reasonable degree of precision and particularity. In re Johnson, 558 F.2d 1008, 194 USPQ 187 (CCPA 1977). In making this determination, the definiteness of the language employed in the claims must be analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. Id. The second paragraph of 35 USC

112 also requires claims to be accurate. In re Knowlton, 481 F.2d 1357, 178 USPQ 486 (CCPA 1973).

Claim 1, from which claims 8, 9 and 11 ultimately depend, recites a non-impact printhead comprising, inter alia, "an electrically conductive via that extends from a back face of the spreader board that is adhered to the tile and the via is filled with an electrically conductive material that electrically connects the via to the tile." This via is described on pages 6 through 8 of the specification as being part of the embodiment of the invention shown in Figures 2 and 3.

Claims 8 and 9 recite that "the spreader board comprises an electrically conductive layer on the back face of the spreader board and the back face of the spreader board is electrically connected to a back face of the array by an electrically conductive layer formed on a front face of the tile." The electrically conductive layer on the back face of the spreader board is described on page 9 of the specification as being part of the alternative embodiment of the invention shown in Figure 4.

When the specification is read as a whole, it is apparent that the via recited in claim 1 and the spreader board conductive layer recited in claims 8, 9 and 11 are mutually exclusive features contained in alternative embodiments of the invention. Thus, claims 8, 9 and 11, when read in light of the

underlying disclosure, are inaccurate and fail to set out and circumscribe a particular area with a reasonable degree of precision and particularity.

In summary:

a) the decision of the examiner to reject claims 1, 3, 6 through 9 and 11 through 17 under 35 USC 103 is reversed; and

b) a new 35 USC 112, second paragraph, rejection of claims 8, 9 and 11 is entered pursuant to 37 CFR 1.196(b).

Any request for reconsideration or modification of this decision by the Board of Patent Appeals and Interferences based upon the same record must be filed within one month from the date of the decision (37 CFR 1.197). Should appellant elect to have further prosecution before the examiner in response to the new rejection under 37 CFR 1.196(b) by way of amendment or showing of facts, or both, not previously of record, a shortened statutory period for making such response is hereby set to expire two months from the date of this decision.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a).

REVERSED; 37 CFR 1.196(b)

JAMES M. MEISTER)
Administrative Patent Judge)
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LAWRENCE J. STAAB) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
) INTERFERENCES
)
JOHN P. McQUADE)
Administrative Patent Judge)

Appeal No. 95-4870
Application 07/812,094

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APPENDIX

1. A non-impact printhead comprising:

an array including a plurality of recording elements;

means incorporated in an integrated circuit driver chip for generating electrical currents to drive selected ones of said recording elements;

means, including a spreader board having electrical leads, for distributing electrical power, ground and control signals to the driver chip;

a tile having supported on one face thereof the spreader board, the driver chip and the array; and

means defining a ground path between the array and the spreader board, the ground path extending along the face of the tile between the array and the spreader board;

wherein the spreader board includes an electrically conductive via that extends from a back face of the spreader board that is adhered to the tile and the via is filled with an electrically conductive material that electrically connects the via to the tile;

wherein the via extends to an intermediate layer of the spreader board and the intermediate layer is between a first conductive layer of the spreader board that includes means for carrying control signals and a second conductive layer of the spreader board that includes means for carrying data signals.

14. A non-impact printhead comprising:

an array including a plurality of recording elements;

means incorporated in an integrated circuit driver chip for generating electrical currents to drive selected ones of said recording elements;

means, including a spreader board having electrical leads, for distributing electrical power, ground and control signals to the driver chip;

a tile having separately supported on one face thereof, in spaced relationship from each other, the spreader board, the driver chip and the array; and

means defining a ground path between the array and the spreader board, the ground path extending along the face of the tile between the array and the spreader board;

wherein the spreader board includes an electrically conductive via that extends from a back face of the spreader board that is adhered to the face of the tile and the via is filled with an electrically conductive material that electrically connects the via to the ground path on the face of the tile; and

wherein a bus bar ground strip is supported upon the spreader board and the ground strip is electrically connected by electrical leads located on the board to the via whereby the array is grounded to the ground strip through the via.

16. A non-impact printhead comprising:

an array including a plurality of recording elements;

means incorporated in an integrated circuit driver chip for generating electrical currents to drive selected ones of said recording elements;

means, including a spreader board having electrical leads, for distributing electrical power, ground and control signals to the driver chip and the spreader board including an electrically conductive coating on a back face thereof;

a tile having separately supported on one face thereof, in spaced relationship from each other, the spreader board, the driver chip and the array; and

means defining a ground path between the array and the coating on the back face of the spreader board, the ground path extending along the face of the tile between the array and the spreader board;

wherein the spreader board includes an electrically conductive via that extends from a front face of the spreader board and the via is filled with an electrically conductive material that electrically connects the via to a signal layer other than ground in the spreader board; a ground strip is supported upon the spreader board and electrically connected to the conductive coating on the back face of the spreader board; and wherein the via is electrically insulated from the coating on the back face of the spreader board.